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FY 1975 Progress Report
PLANT PROTECTION AND QUARANTINE PROGRAMS

Animal and Plant Health Inspection Service
U.S. DEPARTMENT OF AGRICULTURE
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This publication reports activities involving pesticides. It does not contain recommendations for pesticide use nor does it imply that chemicals discussed here have been registered for public use. All uses of pesticides must be registered by appropriate State and/or Federal agencies before they can be recommended.

Caution: If not handled or applied properly, pesticides can be injurious to humans, domestic animals, desirable plants, and fish or other wildlife. Use all pesticides selectively and carefully. Follow recommended practices for the disposal of surplus pesticides and pesticide containers.

Trade names are used in this publication solely for the purpose of providing specific information. Mention of a trade name does not constitute a guarantee or warranty of the product by the U.S. Department of Agriculture or an endorsement by the Department over other products not mentioned.

CONTENTS

	Page
Agricultural quarantine inspection.	2
Aircraft operations	8
Barberry eradication.	8
Boll Weevil-Texas High Plains	8
Burrowing Nematode.	9
Cereal Leaf Beetle.	9
Environmental evaluations	10
Giant African Snail	12
Golden Nematode	12
Grasshopper and Mormon Cricket.	13
Gypsy Moth.	13
Imported Fire Ant	14
Japanese Beetle	15
Khapra Beetle	15
Methods Development	15
Mexican Fruit Fly	16
New Pest Detection and Survey	16
Orange Spiny Whitefly	17
Pest Management	17
Pink Bollworm	19
Plant Importation and Technical Support Staff	22
Professional Development.	23
Safety and occupational health.	23
West Indian Sugarcane Root Borer.	23
Whitefringed Beetle	24
Witchweed	24

FY 1975 Progress Report

PLANT PROTECTION AND QUARANTINE PROGRAMS

This report covers Plant Protection and Quarantine Programs' activities during fiscal year 1975.

PPQ's programs are designed to (1) prevent the entry, establishment, and spread of foreign pests in the United States and (2) suppress periodic outbreaks of certain native pests. Maximum pest control with minimum effect on the environment is the basic objective. This is accomplished through continued monitoring and evaluation of pesticides used in the programs and substitution of biological control methods for chemicals whenever possible.

FY 1975 saw the retirement of Leo G. K. Iverson, who had served as Deputy Administrator for Plant Protection and Quarantine Programs since the formation of the Animal and Plant Health Inspection Service. James O. Lee, Jr., Director of the Program Development Staff at Hyattsville, Maryland, was named Deputy Administrator. G. G. Rohwer succeeded Mr. Lee as Director of the Hyattsville Staff.

The Program Development Staff underwent a reorganization. It was renamed the National Program Planning Staff. Newly designated staff units are Environmental Evaluation, Methods Development, New Pest Detection and Survey, Pest Program Development, Plant Importation and Technical Support, Port Operations Development, and Regulatory Support.

The purpose of this reorganization was to assist the Director in providing overall leadership, coordination, and control to activities concerned with the development and evaluation of programs; the establishment of standards, regulations, and model laws; development of methods and procedures; and other scientific and technical support for the broad Plant Protection and Quarantine Programs.

AGRICULTURAL QUARANTINE INSPECTION

Agricultural quarantine inspection at ports of entry is the Nation's first line of defense against foreign plant and animal pests and diseases. PPQ inspectors work closely with the U.S. Customs Service and other Federal and State agencies in the inspection of incoming passengers' baggage, carriers (aircraft, ships, and vehicles), plants and plant products, agricultural and nonagricultural cargo, and mail.



PPQ inspectors carefully examine ships' stores for pest-risk items during agricultural quarantine inspection at ports of entry.

PPQ inspectors also certify American-grown products that meet the entry requirements of other countries. In addition, they may work in other countries preclearing products for export to the United States.

During FY 1975, there was a general decline in the number of foreign arrivals. Four percent fewer aircraft and 10 percent fewer ships were inspected than in FY 1974.

In spite of the drop in air travel, many smaller interior airports (smaller than the big international airports in major cities such as New York) are requesting permission to receive international flights. Authorization is granted by the U.S. Customs Service with PPQ's concurrence. Approval hinges on the availability of adequate inspection facilities and PPQ inspection services. Inspection service was recently provided at the St. Louis and Kansas City, Missouri, Airports. In various areas of the country, domestic PPQ inspectors are being trained to service charter flights at airports near their work locations.

The newly amended garbage regulations will become effective at ports of entry September 8, 1975. They will provide for better control of garbage from foreign aircraft and ships-one possible source of plant and animal pest and disease introductions.

PPQ inspectors trained and supervised Military Customs inspectors performing the predeparture inspection of troops returning to this country from Germany and Vietman refugees leaving Guam for the United States. They also helped train Military Customs inspectors in the Far East (Guam, Thailand, Philippines, Korea, Japan, Okinawa, and Taiwan). Such inspections eliminate prohibited materials at origin.

Ongoing programs involving preshipment clearance of commodities for export to the United States include flower bulb inspection in Japan, South Africa, and European countries; mango fumigation in Haiti; Unshu orange inspection in Japan; and fruit treatment in Mexico. Programs initiated during FY 1975 included inspection and treatment of citrus fruit in Morocco and inspection of apples in New Zealand. This service is rendered at the request and expense of foreign exporters.

To meet the Peoples' Republic of China's stringent import requirements for U.S. wheat, PPQ developed new microscopic inspection techniques. Sample processing facilities were set up at selected ports.

New guidelines for boarding and inspecting ships became effective in October 1974. They permit better utilization of manpower and promote uniformity in the inspection procedures. Sealing requirements have been eased for some categories of products presenting less risk and more emphasis has been placed on garbage control.

Flights from Puerto Rico to Northern U.S. mainland locations-normally exempt from predeparture inspection - are being inspected by "bio-aids" (summer interns and similar temporary employees) supplied by Veterinary Services. PPQ supervises this inspection designed to prevent the movement of exotic Newcastle poultry disease to the mainland. Large amounts of eggs, poultry, and live birds are intercepted regularly. There has been little decline in the number of seizures since the program began in 1973.

The recent spread of the Mediterranean fruit fly throughout Central America poses a serious threat to this country. Efforts are underway in Mexico to prevent spread of the pest into southern Mexico. Along the United States-Mexico border, USDA and other border clearance agencies are cooperating to prevent host materials originating in Central America from entering this country.

An average of 60,000 cartons of cut flowers enter at the port of Miami each month. New inspection techniques were initiated to expedite processing of this highly perishable commodity. One box of each cut flower variety is examined from each shipment. The need for further inspection depends upon results of the initial inspection.

The consistent interception of rice insect pests in certain types of woven baskets from Korea necessitated a change in entry requirements. An import permit and fumigation upon arrival are now required for the baskets.

Because Caribbean fruit fly was found infesting Florida grapefruit, the Japanese Government now requires that all such fruit be treated and certified before shipment to Japan. New procedures developed allow fumigation in truck trailers. The fruit then moves to market in the trailer in which it was fumigated.

Summary of Agricultural Quarantine Inspection Activities - FY 1975

1. <u>Airplanes</u>	<u>1975</u>	<u>1974</u>
Inspected upon arrival.	261,309	273,337
With prohibited material.	115,829	117,568
Travelers' bags processed	39,515,080	43,622,954
Inspected before departure ^{1/}	39,545	38,141
With prohibited material.	17,088	15,509
Travelers' bags processed	11,500,765	11,590,963
II. <u>Ships</u>		
Boarded and inspected	65,872	73,006
With prohibited plant material.	25,727	28,146
With prohibited animal products	28,883	31,343
Travelers' bags processed	5,118,970	3,823,628
III. <u>Mexican Border</u>		
Vehicles entering ^{2/}	42,471,458	42,953,456
Railroad cars entered ^{3/}	104,744	87,142
Pieces baggage & mandado processed ^{3/}	43,427,427	45,449,865
IV. <u>Mail</u>		
Foreign packages entering	59,747,160	59,149,136
Packages of agriculture interest.	191,224	200,917
Packages refused entry.	3,270	2,470

See Footnotes at end of table.

Summary of Agricultural Quarantine Inspection Activities - FY 1975--Continued

Domestic mail packages processed ^{4/}	3,875,028	4,999,125
Packages of agriculture interest.	26,605	24,436
Packages refused movement to mainland	265	216

V. Cargo Inspection

Entries under permit.	130,553	134,345
Man-hours devoted to inspect nonpermit cargo.	103,906	106,122
Pieces treated or cleaned	5,888,378	5,876,283
Export certificates issued.	75,518	73,826
Pieces aircargo processed	4,639,008	3,844,511

VI. Quarantine Material Interceptions

Plant Material (lots) intercepted from:

Baggage	373,295	354,779
Cargo	5,775	3,408
Mail.	3,982	3,163
Carrier quarters.	42,336	39,180
Carrier stores.	275,283	284,801
Total	700,671	685,331

Animal byproducts (pounds) intercepted from:

Ship passenger baggage.	3,367	34,126
Air passenger baggage	146,120	175,601
Mail and express packages	19,656	13,010
Mexican border and others	141,837	182,507
Total	310,980	405,244

VII. Plant Pest Interceptions of Quarantine Interest

Insects	27,817	27,625
Disease (includes nematodes).	4,177	4,312
Other (includes mites and snails)	<u>1,992</u>	<u>2,449</u>
Total	33,986	34,386

VIII. Animal Byproduct Importations

Restricted entries.	1,626	1,235
(pounds).	147,146,484	153,256,506
Unrestricted entries.	13,549	30,642
(pounds).	327,903,358	748,993,149

IX. Propagative Material Importations (Includes Departmental)

	<u>Entered</u>	<u>Postentry</u>	<u>Treated</u>	<u>Refused Entry</u>
		<u>1975</u>		
Shipments	13,169	652	1,931	622
Plant Units	107,746,738	222,667	17,942,188	104,706
Seeds (pounds).	607,128	177	60,976	3,615
		<u>1974</u>		
Shipments	10,800	688	2,011	370
Plant Units	72,037,499	213,239	40,679,564	409,922
Seeds (pounds).	593,636	185	138,094	2,411

- 1/ Planes inspected in Hawaii, Puerto Rico, the Virgin Islands, Bahamas, and Bermuda before departure for the U.S. mainland.
- 2/ Excludes tank and hopper cars.
- 3/ Mandado includes bags containing groceries and miscellaneous merchandise.
- 4/ Mail preinspected at offshore locations.

AIRCRAFT OPERATIONS

PPQ aircraft were used to test new materials and techniques in a number of pest programs. This included spraying pesticides to control gypsy moth, grasshoppers, boll weevil, and range caterpillar; dispersing micron capsules containing disparlure to attract gypsy moth; and aerial release of parasites against gypsy moth and West Indian sugarcane root borer.

An aircraft was used to transport cereal leaf beetle parasites collected in Indiana and Michigan for immediate release in New York, Ohio, Pennsylvania, Virginia, and West Virginia.

One aircraft equipped with aerial infrared cameras was used for citrus blackfly surveying in Mexico. Aerial infrared photography was tested for detecting spittle bug in Mexico and alfalfa snout beetle in New York.

Other activities included supervision of contract aircraft in the boll weevil, imported fire ant, grasshopper, range caterpillar, and gypsy moth programs, and defoliation surveys in the gypsy moth program.

BARBERRY ERADICATION

Nineteen grain-growing States are cooperating in the barberry eradication program. Of the original 1,073,000 square miles of eradication area, approximately 8,000 square miles remain to be placed on maintenance status--informal, periodic inspection program. During FY 1975, 873,550 native barberries and 2,632 other susceptible barberry plants were destroyed. A 673-square-mile area was placed on maintenance status.

In a nationwide rust survey, 4,439 stem rust survey stops were made. Stem rust losses of grain were light in Kansas and Nebraska in 1974. Severe stem rust developed on the limited wheat acreage of Alabama, Georgia, and Florida.

BOLL WEEVIL—TEXAS HIGH PLAINS

The boll Weevil dispause control program on the Texas High Plains continues to prevent westward spread of the boll weevil to uninfested States.

A total of 591,107 acres was treated in 1974 in the High Plains and Big Bend areas of Texas (flooding along the Rio Grande eliminated the need to treat some areas). Populations in the control zone were reduced to the lowest level in several years. Excellent control below the Texas Cap Rock prevented population buildup in the High Plains.

New grandlure attractant formulations, carriers, and means of dispersal were tested cooperatively with Agricultural Research Service and State cooperators. The effective period of formulation was extended and feasibility of aerial application of capsules demonstrated. Ground equipment was developed for spraying in congested areas where aircraft cannot operate.



This specially developed "spray coupe" is used for boll weevil control in congested areas where aircraft cannot operate.

BURROWING NEMATODE

The U.S. Department of Agriculture and the State of Florida signed a supplement to the Memorandum of Understanding. There will be a phase down of survey in the "push and treat" areas. Growers will pay one-half of survey costs in the "push and treat" areas and 80 percent in the barrier areas from July 1975 through July 1976.

During FY 1975, delimiting surveys were conducted on 1,228 acres and "push and treat" was performed on 247 areas. Root samples collected totaled 61,204--about 9 percent less than the previous year. Of these samples, 48.6 percent was from barrier surveys. Chemical barriers were established on 70,246 linear feet and maintained on 1,465,211 feet.

CEREAL LEAF BEETLE

The Federal and State quarantines, established in the early 1960's, were revoked on October 1, 1973. Quarantine action was not effective in preventing yearly natural spread of the pest. The rearing and releasing of parasites are now the major program functions.

The 1975 spring survey showed more sites infested in the Northeastern States. The beetle was found again in the southeast corner of Wisconsin. No appreciable westward spread or buildup occurred.

The biological control program is showing good progress. One egg parasite and three larval parasites are now being reared and released.

Over 4,000 sites were surveyed for detection of infestations at a level high enough for release of parasites. The egg parasite was found

throughout the infested area, even in some sites where the beetle was difficult to detect. Specimen material was collected from sites throughout the infested area to determine the extent of spread and rate of parasitization by larval parasites.

In 1975, egg and larval parasites were released at 820 sites in 12 States. Backup releases of larval parasites were made in 23 field insectaries in 8 States. Subsequent releases were made in fields where cereal leaf beetle life forms met or exceeded release criteria.

ENVIRONMENTAL EVALUATIONS

The mirex monitoring program continued through FY 1975 without significant changes from FY 1974. Data on treatment efficacy showed 97 percent imported fire ant mound mortality in the fall of 1972 and 98 percent mortality in the spring of both 1972 and 1973.

The Environmental Monitoring Laboratory at Gulfport, Mississippi, continues to expand its facilities. Installation of a gas chromatograph-mass spectrometer data analysis system was completed during the year. The laboratory is now ready to handle new, more sophisticated monitoring programs.

A preliminary field test was conducted to determine the degradation process of malathion. The results provided the information required to design a series of field tests for monitoring the malathion used in grasshopper and boll weevil control in FY 1976.

Extensive field tests of traps, lures, and trapping procedures for the Mediterranean fruit fly were begun in July 1974 and are expected to continue until October 1975.

APHIS and PPQ representatives consulted with the Environmental Protection Agency, USDA's Pesticide and Environmental Quality Executive Committees, and the Federal Working Group on Pest Management to coordinate views on general pesticide and environmental matters. Of particular importance to PPQ are Sections 3, 4, 5, 17(b), 18, and 24(c) of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended.

GIANT AFRICAN SNAIL

The giant African snail was declared eradicated from the continental United States during the year. Emergency regulations in Florida were removed April 13, 1975-2 years after the last snail find.

The intensive information program conducted through television, newspapers, radio, and brochures continues to stimulate phone calls to report suspect snails. A survey is planned in June 1976 on all previously infested and adjacent properties.



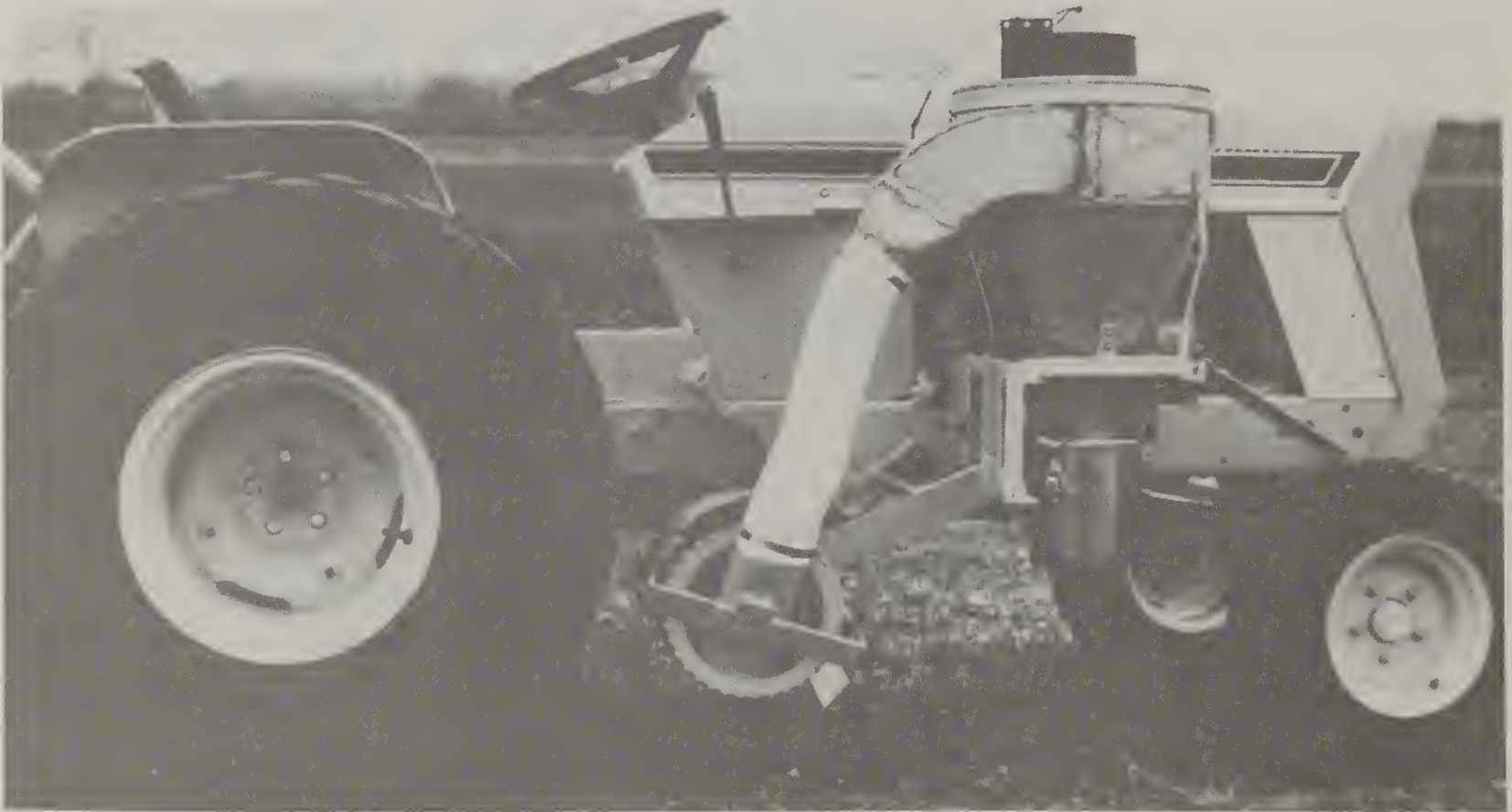
Automated gas chromatograph-mass spectrometer data analysis system for measuring pesticide residue levels.

GOLDEN NEMATODE

Objective of the program is to eradicate the golden nematode from host cropland in the United States by 1980. Eradication is defined as reducing the viable cyst population in the soil to below the detection level.

The nationwide biometric survey has failed to show any nematode infestation outside New York State. A 33-acre field was found infested in Wayne County, New York, in 1975 and is being treated with a soil fumigant. A delimiting survey did not detect any additional infested fields in the county.

During FY 1975, 1,042 acres were found infested on 22 properties on Long Island. Approximately 15 percent of the acres surveyed on Long Island were surveyed with the vacuum sampler. This equipment not only reduces labor costs in the field, but also in the laboratory because less soil is gathered in collecting samples.



This tractor-mounted vacuum soil sampler facilitates the collection of soil samples in golden nematode cyst surveying.

Two golden nematode-resistant potato varieties-Hudson and Wauseon-are being used by Long Island growers. However, there is not enough Hudson seed to take care of growers' needs. Consequently, New York has waived its requirement that resistant seed must be planted on all infested acreage. If unable to obtain Hudson seed, growers may plant a susceptible potato variety and treat with Temik or Furadan.

New York has issued an experimental permit for use of Furadan, a systemic pesticide, for golden nematode control in potatoes. Temik, also a systemic pesticide, has Federal registration for insect control on potatoes in New York, and a New York State registration for control of golden nematode. These two pesticides were used for insect control on an estimated 99 percent of the potatoe acreage on Long Island in 1975. When applied at rates to control insects, they are of some benefit in controlling golden nematode.

GRASSHOPPER AND MORMON CRICKET

Approximately 677,000 acres of rangeland in seven Western and Midwestern States were treated with ULV malathion at 8 ounces per acre to control grasshoppers (control in Wyoming accounted for 419,000 acres). Most of this acreage-518,000 acres-was treated during the fall of 1974. Only 159,000 acres were treated in June 1975. This was in line with the 1974 fall survey which indicated light populations for the following season.

Adult surveys in 1974 showed economic populations of eight or more grasshoppers per square yard on 6,024,080 acres in 16 Western and Midwestern States. This was the lowest infested acreage reported since 1960.

Approximately 23,000 acres in Washington, Nevada, and Idaho were treated to control Mormon crickets, the long-horned grasshoppers. A trend of higher population levels in several Western States indicate that additional surveillance may be required in 1976 to effectively suppress this pest.

During the summer of 1975, PPQ assisted the Agricultural Research Service in evaluating Nosema (parasite) in suppressing populations. Preliminary results were promising. Monitoring techniques developed can be used as a guide for the malathion monitoring program in FY 1976.

GYPSY MOTH

In the detection survey program, about 70,000 traps were placed in 31 States. Among the results:

- . Male moths were trapped for the first time in 13 counties in 10 States.
- . Moths were trapped in 45 counties in 12 States outside the generally infested area. These States have a history of trap catches in previous years.
- . Single moths were trapped for the first time in the States of Missouri and Washington.

New moths were trapped in areas treated with carbaryl in North Carolina and Virginia. The eradication program in Michigan looks encouraging following carbaryl treatments in disparlure trials. FY 1975 trapping yielded 495 moths in 436 traps in 9 counties. Of the 495 moths, 393 were trapped in a special saturation trapping test block of 5,000 acres in a known lightly infested area. Seven egg masses were found in four locations.

In addition to New Jersey, gypsy moth parasite rearing facilities have been established in Maryland, North Carolina, Pennsylvania, Virginia, and West Virginia. The New Jersey and Maryland facilities are partially funded by the Animal and Plant Health Inspection Service.

In the 1974 gypsy moth control program, aerial applications of Sevin 4 Oil were completed on 25,894 acres in New Jersey, New York, and Pennsylvania. Ground applications of Sevin 80 Sprayable were made on 6,390 acres at campsites and mobile parks in the New England States, New Jersey, and Pennsylvania.

New insecticides were tested at the Otis Air Force Base Gypsy Moth Laboratory. One of the most promising is TH-60-40, a growth regulator.

IMPORTED FIRE ANT

The controversy concerning the use of mirex bait continues. USDA suspended the imported fire ant cooperative control program effective June 30, 1975. The Environmental Protection Agency's restrictions on use of the bait made the program unworkable.

During FY 1975, over 5 million acres were surveyed for ant detection and population assessment. Approximately 133 million acres are now infested in Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Texas.

Over 12.6 million acres were treated during the fall and spring control programs. A shortage of corncob grits, the inert ingredient of mirex bait, caused delays in treatment and early curtailment of contracts.

Monitoring of mirex residue levels in the environment continued. The Methods Development Laboratory tested alternate carriers for mirex bait and evaluated 15 chemicals and several growth regulators. No alternate control chemical was found.

JAPANESE BEETLE

During the 1974 adult survey season, beetles were found in several Southern and Midwestern sites. Approximately 36,000 traps were placed in 32 States. The 1975 survey was conducted almost entirely by State cooperators.

Control treatments were applied to 9,437 acres in California, Georgia, Michigan, and Ohio. An additional 5,600 acres were treated at military facilities to reduce the hazard of spread by aircraft.

Monitoring of beetle populations in Connecticut, Ohio, and New York indicated some resistance to chlorenated hydrocarbon insecticides.

KHAPRA BEETLE

The 1975 survey of grain storage areas confirmed that the United States remains free of the khapra beetle. The last known established infestation was eradicated in 1966.

In Mexico, detection surveys were made in cooperation with the Sanidad Vegetal. Inspections were mostly of foreign ships arriving at Mexican ports and of unloaded cargoes.

METHODS DEVELOPMENT

The Methods Development Group conducts an applied research and development program designed to improve PPQ's pest survey, regulatory and control operations.

Nine laboratories are located in various areas of the country. The major ones are the Gypsy Moth Laboratory, Otis Air Force Base, Massachusetts; the Commodity Treatment Laboratory, Hoboken, New Jersey; the Witchweed Laboratory, Whiteville, North Carolina, (with an experimental farm at Dillon, South Carolina); and the Southern Methods Development Laboratory, Gulfport, Mississippi.

Staff members helped State of Florida and Agricultural Research Service personnel develop and test an ethylene dibromide fumigation treatment for Florida grapefruit and mangoes in van trucks.--This technique permitted Florida to ship 6.5 million cartons of fruit to Japan one-third of the State's crop.

Tests showed that three organic carriers can be used in the imported fire ant control program to deliver the pesticide to the ants. Three chemicals showed promise for use by homeowners in treating individual ant mounds.

Examples of recently developed equipment are the tractor mounted vacuum soil sampler used in the witchweed and golden nematode programs and the refrigerated sterile insect release machine used in the boll weevil eradication trials.

MEXICAN FRUIT FLY

Detection surveys were conducted in the five citrus producing States, Puerto Rico, and Northwest Mexico. Over 3,000 McPhail traps were used.

A total of 18,700,000 sterile flies were released in 27 weekly shipments to prevent fruit fly establishment in Northwest Mexico and California.

NEW PEST DETECTION AND SURVEY

During FY 1975, 26 new insects were reported in the United States and 1 in Puerto Rico. All but one find were published in the "Cooperative Economic Insect Report" (CEIR).

Six of the insects were reported from Hawaii (orange spiny whitefly, oleander hawkmoth, a glyphipterigid moth, a noctuid moth, a coccinellid beetle, and a leafhopper); 3 each from California (oriental fruit fly, an aphid, and a leafhopper) and North Carolina (3 aphids); 2 each from Florida (2 thrips), Pennsylvania (European alfalfa beetle and a coniopterygid), and Utah (2 aphids); and 1 each from Alaska (a sawfly), Arizona (a chloropid fly), Georgia (a cecidomyiid midge), Maryland (a weevil), New Jersey (a lady beetle), New York (a rose sawfly), Ohio (a silverfish), and South Carolina (a scolytid beetle). A delphacid planthopper was reported in Florida and a citrus scale insect in Puerto Rico.

There were 141 new State records of species already known to occur in the United States.

In the five PPQ regions, 199 blacklight traps, 30,826 fruit fly traps, 40 trogo traps, 9 Malaise traps, 4 lure traps, and 1 pit trap were operated at international airports, seaports, and military installations to detect foreign pests. Visual surveys for snails, slugs, cyst nematodes, mite injury, parasitic weeds, and arthropod pests totaled 3,800.

The oat cyst nematode was detected in Oregon and surveys were immediately initiated beyond the 25-acre infested field. Upon detection of the orange spiny whitefly in Hawaii, a Federal-State cooperative survey and biological control program was undertaken. A biometric survey (650 trees) is planned for the new citrus scale insect, Parlatoria ziziphi, discovered in Puerto Rico.

The oriental fruit fly was detected in Los Angeles and San Diego Counties, California, in September 1974. It was declared eradicated in April 1975. This was the first time California had had an infestation.

ORANGE SPINY WHITEFLY

This destructive citrus pest was introduced into Hawaii (Waikiki, Oahu) in FY 1975 from the Orient. A biological control program was immediately initiated by State and Federal agencies to contain the insect and prevent its spread into major U.S. citrus growing areas.

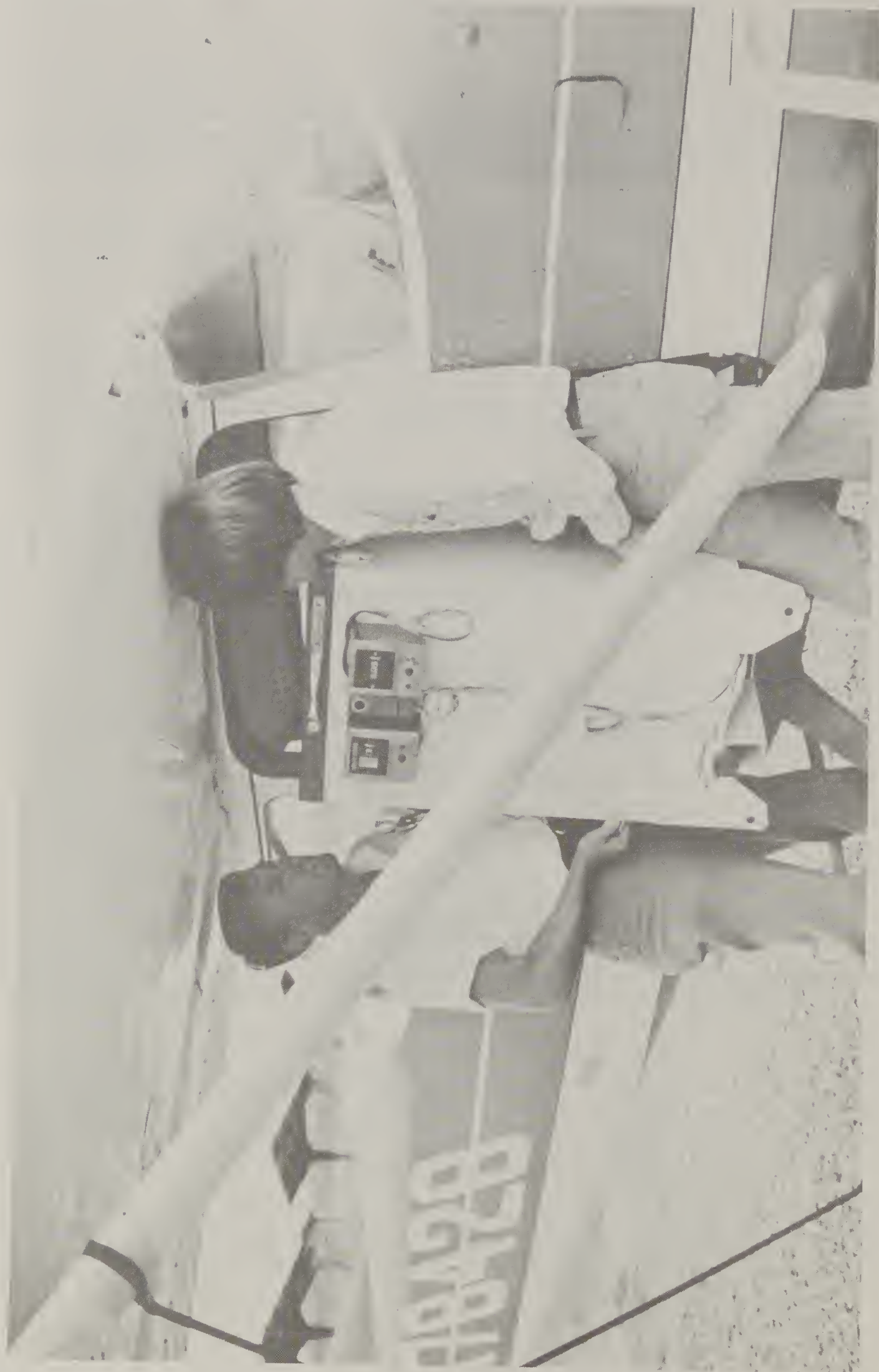
PEST MANAGEMENT

PPQ activities in the cooperative pest management program declined during the year because of an anticipated loss of program funds in FY 1976. Environmental monitoring of the projects was completed with the collection of post-season samples in 1974.

The Environmental Quality Laboratory (EQL) in Brownsville, Texas, was closed in May and the remaining pest management samples were transferred to the EQL in Gulfport, Mississippi, for residue analysis.

FY 1975 funds were obligated for these five projects through the end of FY 1976-

- Grain sorghum - Oklahoma
- Grain sorghum - Texas
- Peanuts - Texas
- Alfalfa seed - Washington
- Pears - California



Refrigerated sterile insect release machine used in boll weevil eradication trials.

PINK BOLLWORM

Objective of the pink bollworm program is to prevent spread of the pest to uninfested cotton-producing areas in the United States (approximately 50 percent) and to determine if it can be eradicated using a combination of the newest techniques.

The sterile moth release program continues to prevent establishment of pink bollworm populations of economic importance in the San Joaquin Valley of California. Approximately 37 million moths were released by aircraft from June 4 to November 16, 1974.

Persistent rearing problems reduced moth releases to a daily 268,000 as compared to approximately 600,000 in 1973. Later improvements in mass rearing techniques, especially in overall sanitation practices, were responsible for significant increases in moth production. Production in June 1975 totaled 18 million moths compared to 3 million in June 1974. Other developments contributing to this increase included improved egg quality and more efficient adult collection techniques. Studies at release sites also indicated a more vigorous moth is being released and is dispersing over greater distances.

Unusually large numbers of native moths were recovered in the San Joaquin Valley. The increase may have been due partially to wind currents resulting from storm conditions to the south. The increased effectiveness of gossyplure, the new sex attractant that replaced hexalure, probably was a factor also. No larvae have been found since 1970. Approximately 36,000 traps were serviced in 1.2 million acres of cotton for detection and monitoring sterile insects.

Biometric surveys, using the new gossyplure, were conducted in non-infested States. Seven pink bollworm moths were trapped in Missouri for the first time. Trap catches also increased in Arkansas and Louisiana where moth populations have fluctuated for a number of years.

An average of approximately 1 million moths was released weekly in wild cotton in Florida during FY 1975.

Two parasites were released in Florida. One has been recovered; however, evaluation is incomplete.

A new pheromone dispenser (Hercom wick) was developed and placed in use after field tests. The wicks are superior to previously accepted dispensing methods.

Two herbicide materials were tested. One (glyphosate) shows promise. Preliminary reports show virtually no regrowth of wild cotton at the end of 4 months.



The orange spiny whitefly, a destructive citrus pest, occurs on the underside of the leaves.



To control the pink bollworm, sterile moths are mass reared and aerially released by a specially developed machine.

Federal, State, and Mexican quarantines continue to prevent artificial spread of the bollworm. The increased effectiveness of gossyplure, as compared to grandlure, necessitates establishment of new criteria for determining areas to be regulated.

PLANT IMPORTATION AND TECHNICAL SUPPORT STAFF

The Plant Germplasm Quarantine Center in Washington, D.C., provides phytosanitary services and safeguards to enable the U.S. Department of Agriculture, in cooperation with various other Federal and State agencies, to export and import germplasm. During FY 1975, the following accessions were processed:

	<u>Imports</u>	<u>Exports</u>
Number of shipments	600	2,532
Number of plant units	2,203	15,987
Pounds of seed	906	3,468

The Plant Quarantine facility at Glenn Dale, Maryland, provided quarantine services and/or virus indexing for the following accessions:

<u>Crop</u>	<u>Number of accessions</u>
Apples	49
Pears	45
Potatoes	91
Stone fruits	160
Miscellaneous, including fruits and ornamentals	360

In addition, quarantine services were provided by cooperative programs between APHIS and other agencies, as follows:

<u>Crop</u>	<u>Cooperator</u>	<u>Location</u>	<u>Number of Accessions</u>
Sugarcane	ARS	Beltsville	258
Rice	ARS	Beltsville	2,142
Strawberry	ARS	Beltsville	20
Citrus	U. of California	Riverside	25
Grape	U. of Calif. and ARS	Davis	263
Corn, wheat and sorghum	ARS or Agricultural Experiment Stations	United States	892

During FY 1975, there was a 22 percent increase in the number of individuals granted final authority to identify and discard plant pests. Also, during the year, 1,108 permits were issued under the Federal Plant Pest Act by the Technical Support Staff. Twenty applications were disapproved.

PROFESSIONAL DEVELOPMENT

PPQ personnel working in the areas of animal byproduct detection and regulation, certification of agricultural commodities for export, and insect identification at ports of entry received formal training necessary for high level performance. The export certification training was also given to 232 State inspectors. The animal byproducts training involved a new multimedia approach, using slidetapes, movies, programmed instructions, problem solving (case studies), and simulations.

Other activities included continued training of military personnel and foreign students in plant protection work and training of new firstline supervisors in basic concepts and skills.

SAFETY AND OCCUPATIONAL HEALTH

Increased emphasis on safety and occupational health resulted in significant reductions in the number of (1) reportable incidents, (2) lost work days, (3) reportable injuries, (4) disabling injuries, and (5) motor vehicle accidents. Employees at all levels are involved in the program.

Ongoing program projects include (1) cholinesterase-level testing to measure the effects of exposure to organophosphate materials, (2) workplace inspections to identify and correct hazardous conditions, (3) defensive-driving training to develop safe driving skills, and (4) protective-equipment use to offer an extra degree of protection in known hazardous situations.

WEST INDIAN SUGARCANE ROOT BORER

Efforts to retard spread of this destructive citrus pest in Florida continue. The ongoing program includes enforcement of State quarantines, biometric surveys around the regulated area to detect any spread, and soil and foliage treatments in infested groves. Approximately 8,500 acres of citrus are under regulation.

Infestations have been reported in nurseries for the first time--one of them in Broward County, South Florida. A citrus grove was found infested in Seminole County, near the original infestation in 1968. Increased inspections at other nurseries and dissemination points were negative. Shipments of plants from Puerto Rico to Florida are being monitored. Quarantine regulations are enforced at all known infestations.

The State of Florida, Agricultural Research Service, and Animal and Plant Health Inspection Service are working on better survey and control techniques, basic life-history data, and parasite rearing. An accelerated

methods development program to develop more effective control and regulatory techniques has been initiated. This includes an insecticide screening and testing program in Puerto Rico.

WHITEFRINGED BEETLE

The Federal quarantine was revoked effective June 30, 1975. During FY 1975, survey and regulatory activities continued. About 3,000 acres were treated to control the beetle. No effective chemical pesticides were found by researchers--leaving chlordane as the only regulatory control chemical available.

WITCHWEED

The success of the witchweed program has led to the adoption of the eradication program on approximately 40,000 acres in the periphery of the infestation. Control procedures developed by the Witchweed Laboratory are being utilized in the eradication program.

During the reporting period, 18,577 initial acres were treated with ethylene. This gas triggers germination of the witchweed seed in the soil. Paraquat was applied to 2,581 initial acres, 2,4-D to 22,816 acres, treflan to 537 acres, and glyphosate to 256 acres.

When areas are removed from regulation as a result of successful completion of eradication, additional acres will be placed in the eradication program. Sufficient control operations will be carried out in the core area to keep seed production to a minimum.